Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A magnetic assembly for use in a multistage magnetic fluid rotary seal comprising:

a shaft having a plurality of trapezoidal-shaped ridges along a circumferential portion of said shaft;

an annular permanent magnet adapted to surround said shaft; and

a magnetically permeable annular first pole piece having a first magnet side and a first pole piece inner diameter, said first magnet side being in a magnetic flux relationship with said magnet, said first pole piece having a plurality of pole piece trapezoidal-shaped ridges along said first pole piece inner diameter wherein a top flat portion of each of said trapezoidal-shaped ridges of said first pole piece is spatially opposed to a flat top portion of one of said plurality of trapezoidal-shaped ridges of said circumferential portion of said shaft, said top flat portion of said plurality of pole piece trapezoidal-shaped ridges being adapted to extend into a close non-contacting relationship with said top flat portion of said plurality of trapezoidal-shaped ridges of said circumferential portion of said shaft wherein said plurality of trapezoidal-shaped ridges form a plurality of trapezoidal-shaped stages, said relationship

defining a radial gap adapted to receive a predefined quantity of ferrofluid disposed in said radial gap at said plurality of trapezoidal-shaped stages.

2. (Original) The magnetic assembly of Claim 1 further comprising a magnetically permeable annular second pole piece having a second magnet side and a second pole piece inner diameter, said second magnet side being in magnetic flux relationship with said magnet, said second pole piece inner diameter adapted to extend into close non-contacting relationship with said plurality of trapezoidal-shaped ridges of said circumferential portion of said shaft, said relationship defining said radial gap adapted to receive a predefined quantity of ferrofluid disposed in said radial gap at said plurality of trapezoidal-shaped stages.

3. (Original) The magnetic assembly of Claim 2 wherein said second pole piece has a plurality of said trapezoidal-shaped ridges along said second pole piece inner diameter wherein each of said trapezoidal-shaped ridges of said second pole piece is spatially opposed to one of said plurality of trapezoidal-shaped ridges of said circumferential portion of said shaft.

4. (Original) The magnetic assembly of Claim 1 wherein each of said trapezoidal-shaped ridges has tapered sides that diverge away from a top plateau portion to an annular region on the surface of said shaft.

5. (Original) The magnetic assembly of Claim 4 wherein said tapered sides of each of said trapezoidal-shaped ridges diverge at an angle between 0 degrees and 180 degrees.

6. (Currently Amended) A method of making a multistage magnetic fluid rotary seal with increased pressure capacity, said method comprising:

forming a plurality of trapezoidal-shaped ridges along a circumferential portion of a rotary shaft;

assembling said shaft with an annular permanent magnet and at least a first magnetically permeable annular pole piece adapted to surround said shaft forming a magnetic circuit wherein said first pole piece has a first magnet side and a first pole piece inner diameter, said first magnet side being in a magnetic flux relationship with said magnet, said first pole piece inner diameter having a plurality of trapezoidal-shaped ridges adapted to extend into a close non-contacting relationship with said plurality of trapezoidal-shaped ridges of said circumferential portion of said shaft wherein said plurality of opposed trapezoidal-shaped ridges <u>have top flat portions that are substantially aligned with each other to</u> form a plurality of trapezoidal-shaped stages, said relationship defining a radial gap; and

disposing a predefined quantity of a ferrofluid in said radial gap at said plurality of trapezoidal-shaped stages.

7. (Original) The method of Claim 6 further comprising assembling a second magnetically permeable pole piece adapted to surround said circumferential portion of said shaft wherein said second pole piece has a second magnet side and a second pole piece inner diameter, said second magnet side being in a magnetic flux relationship with said magnet, said second pole piece inner diameter adapted to extend into a close non-contacting relationship with said plurality of trapezoidal-shaped ridges of said circumferential portion of said shaft, said relationship defining said radial gap and adapted to receive a predefined quantity of ferrofluid disposed in said radial gap at said plurality of trapezoidal-shaped stages.

8. (Original) The method of Claim 7 further comprising forming a plurality of said trapezoidal-shaped ridges along said second pole piece inner diameter wherein each of said trapezoidal-shaped ridges of said second pole piece is spatially opposed to one of said plurality of trapezoidal-shaped ridges of said circumferential portion of said shaft.

9. (Original) The method of Claim 6 further comprising diverging tapered sides of each of said trapezoidal-shaped ridges away from a top portion to an adjacent annular region.

10. (Previously Presented) The method of Claim 9 wherein said diverging step includes diverging said tapered sides at an angle between 0 degrees and 180 degrees.

11. (Currently Amended) A method of making a multistage magnetic fluid rotary seal with increased pressure capacity, said method comprising:

forming a plurality of trapezoidal-shaped ridges along an inner circumferential diameter of a magnetically permeable annular first pole piece;

forming a plurality of trapezoidal-shaped ridges along an outer circumferential portion of a shaft;

assembling said first pole piece with said shaft and an annular permanent magnet, said first pole piece and said magnet adapted to surround said shaft forming a magnetic assembly wherein a top flat portion of each of said trapezoidal-shaped ridges of said first pole piece is spatially opposed to a top flat portion of one of a corresponding trapezoidal ridge of said shaft and adapted to extend into a close non-contacting relationship with said top flat portion of said plurality of trapezoidal-shaped ridges of said shaft forming a plurality of trapezoidal-shaped stages, said relationship defining a radial gap; and

disposing a predefined quantity of a ferrofluid at said plurality of trapezoidal-shaped stages.

12. (Original) The method of Claim 11 further comprising assembling a second magnetically permeable annular pole piece adapted to surround said shaft wherein said second pole piece has a second magnet side and a second pole piece inner diameter, said second magnet side being in a magnetic flux relationship with said magnet, said second pole piece inner diameter having a plurality of said trapezoidal-shaped ridges along said second pole piece inner diameter wherein each of said trapezoidal-shaped ridges of said second pole piece is spatially opposed to one of said plurality of trapezoidal-shaped ridges of said shaft and adapted to extend into a close non-contacting relationship with said shaft, said relationship defining said radial gap.

13. (Original) The method of Claim 12 further comprising diverging tapered sides of each of said trapezoidal-shaped ridges away from a top portion to an adjacent annular region.

14. (Original) The method of Claim 13 wherein said diverging step includes diverging said tapered sides at an angle between 0 degrees and 180 degrees.

15. (Original) A method of improving the pressure capacity of a multistage magnetic fluid rotary seal having a shaft, a permanent magnet, at least one pole piece wherein said shaft and said at least one pole piece each has a plurality of

geometric-shaped stages, and ferrofluid disposed in a radial gap between said plurality of stages of said pole piece and said shaft, the improvement comprising:

forming said plurality of geometric-shaped stages into trapezoidal-shaped stages having a flat top portion facing said radial gap and tapered sides that diverge from said top portion.

16. (Currently Amended) A multistage ferrofluid seal comprising:

a rotary shaft having a circumferential portion with a plurality of circumferential trapezoidal-shaped ridges;

at least one pole piece having an inner diameter with a plurality of trapezoidal-shaped ridges, said at least one pole piece being disposed around said circumferential portion of said rotary shaft in a non-contacting relationship wherein each of said plurality of trapezoidal-shaped ridges of said at least one pole piece has a top flat portion that is opposed to a top flat portion of one of said plurality of circumferential trapezoidal-shaped ridges of said rotary shaft and forming a radial gap between said shaft and said inner diameter of said at least one pole piece;

an annular magnet disposed around said rotary shaft in a non-contacting relationship and adjacent said at least one pole piece;

ferrofluid disposed within said radial gap formed between said at least one pole piece and said shaft; and

a housing to contain said circumferential portion of said shaft, said at least one pole piece and said annular magnet.

17. (Original) The seal of Claim 16 further comprising a second pole piece having an inner diameter with a plurality of trapezoidal-shaped ridges, said second pole piece being disposed around said circumferential portion of said rotary shaft in a non-contacting relationship wherein each of said plurality of trapezoidal-shaped ridges of said second pole piece is opposed to one of said plurality of circumferential trapezoidal-shaped ridges of said rotary shaft and forming a radial gap between said shaft and said inner diameter of said second pole piece.

18. (Original) The seal of Claim 16 wherein each of said trapezoidal-shaped ridges has tapered sides that diverge away from a top plateau portion to an annular region.

19. (Original) The seal of Claim 18 wherein said tapered sides of each of said trapezoidal-shaped ridges diverge at an angle between 0 degrees and 180 degrees.